**AMENDMENTS TO THE CLAIMS:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Original) A method for refining the microstructure in titanium alloys in a single thermo-mechanical processing (TMP) step, comprising the step of subjecting a boron-containing titanium alloy to a TMP step to provide a titanium alloy having a fine-grained, equiaxed microstructure after a single TMP step.

2. (Original) The method of claim 1 wherein the boron-containing titanium alloy comprises an alloy selected from the group consisting of Ti-5Al-2.5Sn, Ti-6Al-4V, Ti-5.5Al-1Fe, Ti-6Al-2Sn-4Zr-2Mo, Ti-6Al-2Sn-4Zr-6Mo, Ti-8Al-Mo-1V, Ti-10V-2Fe-Mo, Ti-4.5Fe-6.8Mo-1.5Al, Ti-5Al-1Fe, Ti-8Mn, and CP Ti.

3. (Original) The method of claim 2 wherein the boron-containing titanium alloy comprises Ti-6Al-4V.

4. (Original) The method of claim 1 wherein the titanium alloy comprises from 0.01% to 18.4% boron by weight.

5. (Original) The method of claim 5 wherein the titanium alloy comprises from 0.5% to 1.6% boron by weight.

6. (Original) The method of claim 1 comprising the additional step of subjecting the titanium alloy having a fine-grained, equiaxed microstructure to one or more additional TMP steps to produce a desired shape.

7. (Original) A method for refining the microstructure in titanium alloys in a single TMP step comprising the steps of :

a) adding boron to a titanium alloy to form a boron-containing titanium alloy; and

b) subjecting the boron-containing titanium alloy to a TMP step; wherein a fine-grained, equiaxed microstructure in the titanium alloy is achieved after a single thermo-mechanical processing step.

8. (Original) The method of claim 7 wherein the boron is added to the titanium alloy in a liquid state, wherein the boron is dissolved in the liquid titanium alloy.

9. (Original) The method of claim 7 wherein the boron is added to the titanium alloy through intermixing of a boron-containing powder and a titanium-containing powder.

10. (Original) The method of claim 7 wherein the boron is selected from the group consisting of elemental boron, $TiB_2$, or a boron-containing alloy.

11. (Original) The method of claim 7 wherein the boron is added to the titanium alloy in the range from 0.01% to 18.4% by weight.

12. (Original) The method of claim 11 wherein the boron is added to the titanium alloy in the range from 0.5% to 1.6% by weight.

13. (Original) The method of claim 7 wherein the boron-containing titanium alloy comprises an alloy selected from the group consisting of Ti-5Al-2.5Sn, Ti-6Al-4V, Ti-5.5Al-1Fe, Ti-6Al-2Sn-4Zr-2Mo, Ti-6Al-2Sn-4Zr-6Mo, Ti-8Al-Mo-1V, Ti-10V-2Fe-Mo, Ti-4.5Fe-6.8Mo-1.5Al, Ti-5Al-1Fe, Ti-8Mn, and CP Ti.

14. (Original) The method of claim 13 wherein the boron-containing titanium alloy comprises Ti-6Al-4V.

15. (Original) A method for achieving beta-phase superplasticity in titanium alloys, the method comprising the step of deforming a boron-containing titanium alloy under beta-phase strain rates and temperatures that correlate with the titanium alloy and boron content.

16. (Original) The method of claim 15 wherein the boron-containing titanium alloy comprises from 0.01% to 18.4% boron by weight.

17. (Original) The method of claim 16 wherein the boron-containing titanium alloy comprises from 1.6% to 2.9% boron by weight.

18. (Original) A method for achieving beta-phase superplasticity in titanium alloys, the method comprising the steps of

a) adding boron to a titanium alloy to form a boron-containing titanium alloy;

b) determining beta-phase strain rates and temperatures for the boron containing titanium alloy; and

c) deforming a boron-containing titanium alloy under beta-phase strain rates and temperatures determined in step a.

19. (Original) The method of claim 18 wherein the boron is added to the titanium alloy in a liquid state, wherein the boron is dissolved in the liquid titanium alloy.

20. (Original) The method of claim 18 wherein the boron is added to the titanium alloy through intermixing of a boron-containing powder and a titanium-containing powder.

21. (Original) The method of claim 18 wherein the boron is selected from the group consisting of elemental boron, $TiB_2$, or a boron-containing alloy.

22. (Original) The method of claim 18 wherein the boron is added to the titanium alloy in the range from 0.01% to 18.4% by weight.

23. (Original) The method of claim 33 wherein the boron is added to the titanium alloy in the range from 0.5% to 1.6% by weight.

24. (Original) The method of claim 18 wherein the boron-containing titanium alloy comprises an alloy selected from the group consisting of Ti-5Al-2.5Sn, Ti-6Al-4V,Ti-5.5Al-1Fe, Ti-6Al-2Sn-4Zr-2Mo, Ti-6Al-2Sn-4Zr-6Mo, Ti-8Al-Mo-1V, Ti-10V-2Fe-Mo, Ti-4.5Fe-6.8Mo-1.5Al, Ti-5Al-1Fe, Ti-8Mn, and CP Ti.

25. (Original) The method of claim 24 wherein the boron-containing titanium alloy comprises Ti-6Al-4V.

26. (Currently Amended) A part formed by the method of claim 15 ~~or 18~~.